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**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Preserving the Open Internet	)	GN Docket No. 09-191
	)	
Broadband Industry Practices	)	WC Docket No. 07-52
To: The Commission		

**REPLY COMMENTS OF ALCATEL-LUCENT**

Paul Kenefick  
Vice President, Public Affairs  
Americas Region  
**ALCATEL-LUCENT**  
1100 New York, Avenue, N.W.  
Suite 640 West Tower  
Washington, D.C. 20005

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## SUMMARY

The record in this proceeding reflects the widely held view that the Commission should refrain from limiting network management or managed services given the rapid growth in demand for bandwidth and broadband services. To avoid congestion that would degrade the online user experience, service providers must have the flexibility to manage their networks effectively.

Alcatel-Lucent (“ALU”) notes that there is strong agreement among commenters recognizing the critical importance of an open Internet *and* the need for private investment to continue expanding broadband network capacity and coverage across the nation. ALU is intrigued by alternatives identified in the comments round in favor of a policy of self-governance that would advance Internet openness without overly restrictive rules.

The record also demonstrates that the Commission should refrain from net neutrality regulation where several parties – including fixed and mobile broadband service providers, equipment manufacturers, content producers and consumer groups – caution against imposing network neutrality rules where no evidence of a problem exists. They share ALU’s concern that unnecessary regulation will stifle investment and innovation and could create adverse consequences internationally.

Further, the proposed rules would be particularly detrimental if applied to nascent wireless broadband services given the unique technical and market characteristics in the wireless sector. Accordingly, the Commission should be even more cautious with respect to wireless broadband and, at most, seek additional information before advancing a net neutrality regulatory regime on the wireless industry.

The record also demonstrates substantial agreement among commenters regarding the importance of managed services and quality of service (“QoS”)–enabled capabilities in the development of broadband networks. These capabilities enhance applications that are sensitive to packet loss, delay, bandwidth fluctuations and similar issues, while, as demonstrated in the traffic management study submitted by ALU in January, helping to manage network congestion so as to enhance “best effort” Internet offerings. ALU thus urges the Commission to allow managed services and QoS capabilities to serve as complements to “best effort” Internet offerings with minimal regulation.

Finally, ALU urges the Commission to support the development of “applications enablement,” which would allow users to select their QoS capabilities for particular applications or locations, an approach that several parties endorse. These capabilities provide enormous value to end users and application providers by empowering them to customize their broadband Internet access service with QoS for chosen applications or locations. An unqualified, overly-restrictive nondiscrimination proposal, however, could have the perverse effect of frustrating such user freedom.

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Alcatel-Lucent (“ALU”) respectfully submits these reply comments in response to the initial submissions in the above-captioned proceeding.<sup>1</sup> The record reveals common ground among a wide array of commenters in favor of an open Internet and continued innovation and investment in the Internet ecosystem. Achieving these goals, however, will require the Commission to examine the facts in the marketplace carefully to distinguish cognizable risks to consumers from speculation based on fear, uncertainty and doubt. ALU reiterates that enhanced network neutrality rules are not necessary as no evidence of a problem exists that cannot be adequately addressed by the existing principles – and such mandates would in fact stifle innovation and investment. Further, in light of the D.C. Circuit’s recent *Comcast* decision regarding the Commission’s authority to regulate in this area, the adoption of expansive net

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<sup>1</sup> *Preserving the Open Internet; Broadband Industry Practices*, GN Docket No. 09-191, WC Docket No. 07-52, Notice of Proposed Rulemaking, 24 FCC Rcd 13064, 13084-86 ¶¶ 51-54 (2009) (“*NPRM*”).

neutrality regulation will only result in more uncertainty and impose significant restraints on innovation and investment.<sup>2</sup>

Some parties have put forward alternative proposals that may offer opportunities to advance Internet openness through self-governance without prescriptive rules for both wireline and wireless networks. ALU supports this logic. However, we also recognize that there are material differences in wireless network capacity as a function of the local environment and the availability of spectrum. Therefore, in the event the Commission does move forward with the proposed rulemaking, those rules should not be equally applied to the nascent wireless broadband market.

Finally, we note that there is wide support in the record to allow user-directed quality of service (“QoS”) capabilities, or “applications enablement,” to empower end users to customize their broadband Internet services to meet their specific needs, both now and in the future. Given the dynamically changing nature of the applications and services landscape, the ability for consumers to adapt their services to their particular preferences and needs at each point in time will be critical to ensure consumer satisfaction and, by extension, unfettered growth of the Internet.

**I. THE RECORD UNDERSCORES THE CONCERN THAT THE COMMISSION NOT LIMIT NETWORK MANAGEMENT OR MANAGED SERVICES AT A TIME OF UNPARALLELED GROWTH IN DEMAND FOR BANDWIDTH AND NETWORK SERVICES.**

In its initial comments, Alcatel-Lucent observed that broadband Internet access service providers are experiencing a dramatic increase in bandwidth demand and that the Commission should be encouraging, not discouraging or even prohibiting, imaginative network management

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<sup>2</sup> See *Comcast Corp. v. FCC*, No. 08-1291, slip op. (D.C. Cir. Apr. 6, 2010).

techniques and managed services.<sup>3</sup> As a result of the development of more powerful end user devices, the growth in applications and services of considerable value to consumers, and the increased quantity of time spent online, both wireline and wireless service providers are experiencing a dramatic increase in demand.<sup>4</sup> As this demand strains networks, service providers must be free to manage their networks to ensure bandwidth is allocated properly among end users in order to avoid congestion. Service providers also should be free to consider information concerning an application's sensitivity to delay. Likewise, service providers should be allowed to allocate bandwidth to meet demand and migrate 'chatty' applications from the "best effort" environment to a managed services environment, thereby effectively increasing available bandwidth for all users.

Other parties to this proceeding expressed similar views. The Telecommunications Industry Association ("TIA"), for example, notes that increased network usage cannot be economically addressed solely through increased network deployment.<sup>5</sup> AT&T notes that, as network capacity increases, usage rapidly expands to fill the new capacity.<sup>6</sup> Further, the need for network management and managed services to address growing demand is especially important in the wireless context. As a result of limited spectrum and exploding demand for wireless services, wireless service providers need maximum flexibility to manage their networks and thereby provide a higher-quality user experience.<sup>7</sup> The Commission thus must account for unparalleled growth in demand in any consideration of network management practices.

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<sup>3</sup> Comments of Alcatel-Lucent at 8 ("ALU Comments") & Attachment, "Analysis of the impact of traffic growth on the evolution of Internet access" ("ALU White Paper").

<sup>4</sup> *Id.* at 5.

<sup>5</sup> Comments of Telecommunications Industry Association IA at 24-25 ("TIA Comments").

<sup>6</sup> Comments of AT&T Inc. at 41-47 (filed Jan. 14, 2010) ("AT&T Comments").

<sup>7</sup> Comments of Qualcomm at 11; Comments of Ericsson at ii.

## **II. THE RECORD REFLECTS OPPORTUNITIES TO FIND COMMON GROUND THAT WILL ADVANCE AN OPEN INTERNET AND ENABLE INVESTMENT AND INNOVATION TO FLOURISH**

The initial round of comments demonstrates that there is much common ground with respect to the participating parties' commitment to an open Internet, and to furthering investment and innovation across the Internet ecosystem. While parties across the spectrum of the net neutrality debate continue to vigorously advocate their positions, the comments demonstrate a commonality of core values that ALU and many other premier innovators and investors in broadband share.

First and foremost, there is widespread agreement regarding the benefits of an open Internet where users enjoy broad freedom to use the content, applications and devices of their choice and where the many companies competing to provide offerings with increasingly sophisticated technologies are free to serve those customers effectively. Comcast observes, for example, that every day its "subscribers take full advantage of the Internet. . . . They call family and friends all over the world using Skype, Vonage, Google Voice, Phone Power, ViaTalk, CallCentric, or any other over-the-top VoIP provider they want. They download and upload videos, pictures, music, text, or some other file, using any format, protocol, application, or service they want. In short, Comcast and other broadband Internet Service Providers ('broadband ISPs') are delivering consumers what they demand: an open, robust, and exciting Internet."<sup>8</sup>

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<sup>8</sup> Comments of Comcast Corp. at 2 ("Comcast Comments"); *see also, e.g.*, AT&T Comments at 80-82 (arguing that the Internet ecosystem has never been healthier and the Internet has exploded with new content and new applications, such as YouTube, Hulu, Facebook, and Twitter, which "have changed the face of the Internet and society at large—all without any impediment from broadband providers or any need for government regulation.").

Second, there is broad recognition that private investment in broadband networks is essential for the Internet to continue to grow and flourish. Free Press observes that “[t]he high-speed Internet Service Provider (ISP) sector is one of the most capital-intensive sectors in our economy,” and that “[b]uilding networks requires substantial upfront investments....”<sup>9</sup> The Open Internet Coalition notes further that “the Commission should adopt rules in th[e] proceeding that encourage additional private investment in increased capacity.”<sup>10</sup>

Indeed, there is little dispute regarding the Commission’s ultimate goals in promoting consumer welfare on the Internet and continued innovation and investment throughout the Internet ecosystem, although there remains disagreement about which course is best-suited to achieve those goals.

ALU notes that parties have offered a variety of approaches, as alternatives to the proposed rules, for ensuring that the Internet remains a vibrant platform for innovation, job creation, civic engagement and other invaluable social benefits for future generations of Americans. Google and Verizon, for example, filed a joint letter independent from their own individual comments, setting forth their common views regarding the open Internet – “a self-directed ecosystem that continues to innovate and invest without unnecessarily restrictive government intervention.”<sup>11</sup> The companies identified several shared principles and policy goals advanced in the *NPRM*, including: “[the] existing wireline broadband principles provide useful statements of general policy”; “[n]etwork operators must have the flexibility to manage their networks to deal with a range of network-impacting issues”; “network operators should continue to have the ability to offer users the choice of service options in addition to traditional Internet access services”; “[i]ncreased transparency protects consumers and decreases the chances of bad

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<sup>9</sup> Comments of Free Press at 12-13.

<sup>10</sup> Comments of the Open Internet Coalition at 46.

<sup>11</sup> Joint Submission of Google and Verizon at 1.



acts or harmful practices on the Internet”; and “differential treatment of Internet traffic by network operators ... could be acceptable or unacceptable discrimination, depending on their effect on competition and on users.”<sup>12</sup> The companies went on to state, “the Internet community is highly motivated and well positioned to police itself.... Going forward, it remains critical to preserve this system of self-governance, with governmental involvement limited to dealing with bad actors on a case-by-case basis where industry mechanisms are unable to resolve conduct that is anticompetitive and harms consumers.”<sup>13</sup>

ALU is intrigued by discussions of this nature that offer the promise of reining in behavior that harms consumers or is anticompetitive, while allowing the Internet ecosystem to flourish without prescriptive rules that may impede investment, innovation, and emerging business models.

ALU also supports a framework by which transparency can enhance the operation and efficiency of the market. Consumers should be well-informed about the capabilities and limitations of broadband offerings available to them.<sup>14</sup> At the same time, industry actors should not be subject to overly burdensome requirements or required to disclose proprietary information.<sup>15</sup> Thus, it is crucial that any transparency framework be balanced to preserve the flexibility that will best promote the broadband marketplace and consumer access to relevant information.

The critical task for the Commission going forward is to consider this record carefully, with regulatory restraint as a guiding principle, in light of the dynamic nature of today’s Internet.

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<sup>12</sup> *Id.* at 7-8.

<sup>13</sup> *Id.* at 4.

<sup>14</sup> *See, e.g.*, Comments of Verizon and Verizon Wireless at 131; Comments of AT&T at 188.

<sup>15</sup> *See* TIA Comments at 29-32;

**III. THE RECORD REFLECTS THE WIDELY-HELD VIEW THAT UNNECESSARY AND EXTENSIVE INTERVENTION, AS THE COMMISSION PROPOSES, WOULD RESULT IN NEGATIVE CONSEQUENCES.**

**A. There is Widespread Agreement that the Commission Should Refrain from Imposing Network Neutrality Rules Where No Evidence of a Problem Exists.**

Despite some parties' fears to the contrary, the vast majority of initial comments in this proceeding reflect the reality that there is no compelling need to adopt network neutrality rules because there is no evidence that a problem exists.

The Internet ecosystem has flourished in the absence of binding rules. Internet users are *already* free to use the Internet content, applications and devices of their choosing. Further, the few concrete counterexamples put forth by proponents of increased regulatory involvement in this space demonstrate that such occurrences are rare and short-lived (*i.e.*, the *Madison River* case, which was promptly settled through a consent decree, and the *Comcast* case, in which the company agreed to modify its network management practices).<sup>16</sup>

In light of the paucity of evidence of clear consumer harm, the Commission's proposed network neutrality rules are unnecessary. This conclusion is underscored by the many parties opposing the proposed rules, including fixed and mobile broadband service providers, equipment manufacturers, and content producers, as well as civic and consumer groups.<sup>17</sup> As the Information Technology & Innovation Foundation states:

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<sup>16</sup> See *Madison River Communications, LLC and affiliate companies*, Order, 20 FCC Rcd 4295 (EB 2005); *Formal Complaint of Free Press and Public Knowledge Against Comcast Corporation for Secretly Degrading Peer-to-Peer Applications*, Memorandum Opinion and Order, 23 FCC Rcd 13028 (2008).

<sup>17</sup> Comments of Older Adults Technology Services at 2-3 ("OATS Comments"); Comments of the National Organizations at 14-23 ("National Organizations Comments") (representing the views of "sixteen highly respected civil rights, professional, service and elected officials' organizations"); Comments of Internet Innovation Alliance at 5-8 ("IIA Comments"); Comments of National Grange at 1

While we're sympathetic to the rights and needs of both consumers and innovators, we're unaware of any *current* behavior in the Internet marketplace that would demand immediate Commission action. Moreover, the two instances of operator behavior that the NPRM cites . . . have long since been corrected.<sup>18</sup>

Similarly, as Verizon and Verizon Wireless observe, “two isolated examples of a problem that the Commission cites . . . can hardly form the predicate for sweeping new regulation of a flourishing and dynamic industry that has enhanced consumer welfare in innumerable ways.”<sup>19</sup> Given its longstanding commitment to, and involvement with, preserving an open Internet, ALU does *not* suggest that the government sit back were there to be clear consumer harm or anticompetitive conduct, but that simply is not the case here. “Although the Commission noted that it ‘must always be alert and ready to act’ against risks ‘that result in consumer harm,’ th[ese] concerns do not attend the current market.”<sup>20</sup> Given the absence of evidence of clear consumer harm, the Commission should note the robust growth and innovation that the broadband Internet has experienced under the existing regulatory structure and decline to adopt new network neutrality rules.<sup>21</sup>

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(“National Grange Comments”); Comments of American Consumer Institute Center for Citizen Research Comments at 1-3 (“ACI Comments”); Comments of Verizon and Verizon Wireless at 2-11 (“Verizon Comments”); Comments of Sprint Nextel Corp. at 15 (“Sprint Nextel Comments”).

<sup>18</sup> Comments of Information Technology & Innovation Foundation at 10.

<sup>19</sup> Verizon Comments at 6.

<sup>20</sup> Comments of the Independent Telephone & Telecommunications Alliance at 3 (“ITTA Comments”) (citation omitted).

<sup>21</sup> TIA Comments at 18-21; *see also id.* at 23-24 (noting that the flexibility afforded by the Commission’s existing approach has not yielded an onslaught of alleged discrimination but rather vigorous network deployment and innovation); *see also NPRM*, 24 FCC Rcd at 13083 ¶48.

**B. Commenters Also Agree that Adopting Unnecessary Network Neutrality Regulation Will Stifle Investment and Innovation.**

The record also supports the view that adopting network neutrality rules will stifle investment and innovation, thereby frustrating achievement of the Commission's broadband deployment and adoption goals.<sup>22</sup>

As one commenter states: "Now is the wrong time to experiment with considerable new regulations. These significant concerns have the potential to adversely impact desperately-needed infrastructure investment, in addition to global investment flows and domestic economic recovery."<sup>23</sup> In the broadband market, where innovation and emerging business models abound, regulation necessarily constrains providers' flexibility to meet consumer demands and develop new and sustainable ways to serve as the engine for ever-expanding economic and social benefits. In short, given the *increasingly dynamic nature of the market, now is the least appropriate time for regulation*, it would almost by definition be incapable of keeping pace with marketplace developments and would stifle the manifest, nascent innovation in applications and services available over the Internet.

In addition, adopting the proposed network neutrality rules effectively would shift providers' resources from building and upgrading broadband networks and developing new offerings *that consumers want* to complying with regulations *that the Commission mandates*. Rather than working freely and creatively to address new technical challenges in managing network congestion and service quality, engineers increasingly would find themselves seeking attorneys' and regulators' guidance regarding what practices could be allowed and, more

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<sup>22</sup> See, e.g., ITTA Comments at 3 ("the Commission must not impose unnecessary and burdensome requirements that discourage investment and innovation."); OATS Comments at 2; National Organizations Comments at 19-23; IIA Comments at 3-5, 6-8; National Grange Comments at 1-2; ACI Comments at 6-8; Verizon Comments at 66-77; Sprint Nextel Comments at 38-39.

<sup>23</sup> IIA Comments at 5.

disturbingly, declining to pursue promising technical solutions based on the uncertainty surrounding whether such solutions will be approved by regulators.<sup>24</sup>

At a time when the Nation's top priority is to re-establish its standing in world markets by creating jobs and promoting economic growth, it cannot afford to adopt new policies that, instead, will chill the investment and innovation that drive such growth. It is difficult to reconcile the significant efforts by Congress and the Administration to combat high unemployment with the *NPRM*'s proposed network neutrality rules, which would weaken overall job growth. This contradiction is dramatized by a recent study, which analyzes historical data to conclude that, even within the IT sector, network companies create twice as many jobs as other companies providing services and applications over such networks.<sup>25</sup> This is to say nothing about the jobs created by small businesses and others engaged in commerce over the Internet whose profitability is enhanced as a result of the availability of increasingly sophisticated broadband networks. The importance of avoiding investment-stifling regulation is also driven home by a recent study by the Democratic Leadership Council, which observes: "[T]o promote a sustainable recovery and to create jobs we need to create an economic climate for businesses to invest and innovate again."<sup>26</sup>

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<sup>24</sup> See, e.g., Comments of CTIA at 31-33 ("CTIA Comments") (noting that wireless providers would have to seek FCC permission before implementing new and novel network management practices or run the risk that such practices would later be deemed unlawful).

<sup>25</sup> Larry F. Darby, Joseph P. Fuhr, Jr. & Steve B. Pociask, The American Consumer Institute Center for Citizen Research, *The Internet Ecosystem: Employment Impacts of National Broadband Policies*, at 1-2 (Jan. 28, 2010), available at <http://www.theamericanconsumer.org/wp-content/uploads/2010/01/aci-jobs-study-final1.pdf>.

<sup>26</sup> Jessica Milano, The New Democratic Leadership Council, *Where Jobs Come From: The Role of Innovation, Investment, and Infrastructure in Economic and Job Growth*, at 2 (Feb. 2010), available at <http://www.dlc.org/documents/WhereJobsComeFrom.pdf>.

**C. Commenters Point Out that the Proposed Rules Would Put the United States Out of Step With the Rest of the World.**

In its initial comments, ALU emphasized that the proposed network neutrality rules are ill-advised, in part because they would constitute an unwelcome departure from policies first adopted during the Clinton Administration that have formed the core policies advocated by the United States in international fora for the last several years.<sup>27</sup> Pointing to the example of the EU and other developed nations declining to regulate as intrusively as the *NPRM* proposes, ALU warned that adopting the proposed rules (particularly the unqualified nondiscrimination principle) could drive innovation and investment to countries with less onerous regulation.<sup>28</sup>

Further, adopting the proposed rules also would establish a dangerous precedent for countries that might go even further than the *NPRM* suggests would be appropriate. As Ambassador Philip L. Verveer, Coordinator for International Communications & Information Policy, U.S. Department of State, stated recently:

[T]he Network Neutrality proceeding has attracted extensive attention around the world.... In some countries it is being interpreted as an initiative by the United States to regulate the Internet. And we are concerned that in some countries it may be used as a justification for blocking access for purposes of preventing unwelcome political, social, or cultural information from being disseminated to their citizens. Chairman Genachowski addressed this issue, very effectively I thought, at the recent ITU Regulators' Forum in Beirut.... But notwithstanding this and similar statements from FCC officials, this issue has not and will not go away. It almost certainly will become more pronounced at the time the FCC renders its decision.<sup>29</sup>

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<sup>27</sup> ALU Comments at 25.

<sup>28</sup> *Id.* at 26.

<sup>29</sup> Ambassador Philip L. Verveer, Coordinator for Int'l Communications & Information Policy, U.S. Dept. of State, Remarks Before the Swedish-American Chamber of Commerce and Federal Communications Bar Ass'n: *International Innovation and Broadband* (Dec. 3, 2009), available at <http://www.state.gov/e/eeb/rls/rm/2009/133802.htm>.

Other parties in this proceeding share this concern. One comments that “[i]nternational approaches to issues grouped under the ‘net neutrality’ umbrella have been far less interventionist than the rules proposed in the NPRM.”<sup>30</sup> Another warns that “preemptive U.S. net neutrality regulation could start a landslide of international Internet regulation aimed at controlling the global network.”<sup>31</sup> Thus, these parties join in the warning by ALU and members of the Administration itself that adoption of the proposed rules would risk undermining America’s standing as a defender of Internet freedom and creating other adverse consequences internationally.

**IV. WIRELESS BROADBAND IS STILL IN THE NASCENT STAGE, AND THE COMMISSION SHOULD MONITOR THE MARKET AS INNOVATIVE NEW ALTERNATIVES DEVELOP FOR ALL TYPES OF MOBILE USERS.**

The Commission has acknowledged the unique technical, structural, historical and consumer usage characteristics of non-wireline forms of Internet access, *e.g.*, mobile and fixed wireless and satellite. ALU, in its initial comments, noted these characteristics, emphasizing the constraints wireless broadband faces with respect to “dynamically changing radio resources shared among multiple users,” as well as the related need for new spectral allocations for wireless broadband to help meet current and expected demand for these services.<sup>32</sup> Other parties expanded on the special challenges faced by wireless broadband, including the mobility of the customer base and the closer integration of wireless devices and networks relative to devices attached to wireline networks.<sup>33</sup> For all these reasons, the Commission should be even more reluctant to impose network neutrality regulation on wireless broadband.

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<sup>30</sup> AT&T Comments at 87.

<sup>31</sup> CTIA Comments at 31.

<sup>32</sup> ALU Comments at 27-28.

<sup>33</sup> *See, e.g.*, CTIA Comments at 41-42 (explaining that, unlike wireline networks and attached devices, there is no controlled access point between a wireless device and the network on which it operates); *id.* at

The record also reflects that the unique characteristics of wireless extend beyond operational constraints. One party, for example, notes that wireless is “a highly competitive and dynamic market characterized by constant innovation and investment that is leading to an ever-expanding array of consumer choices.”<sup>34</sup> This dynamism, rapid expansion of consumer choice, and recent introduction of new technologies such as 4G suggest that wireless broadband remains nascent in important respects. Indeed, as Chairman Genachowski recently noted, “[M]obile broadband is still in the preliminaries.... [T]hese early days of mobile broadband demonstrate tremendous opportunities.”<sup>35</sup> Even more than in the wireline context, the imposition of network neutrality regulation on wireless broadband risks skewing or squelching investment and innovation – all to the detriment of consumers who look to wireless broadband as a convenience, a promising avenue for becoming more comfortable with using broadband<sup>36</sup> and, increasingly, as an alternative to fixed broadband.<sup>37</sup>

Innovation and growth in the wireless space will also impact the wireline market because the two networks are increasingly common, even sharing the same network elements such as switches and routers from the access portion of the network to the Internet peering point. In addition, the desire on the part of end users for a seamless experience when moving between wired and wireless connectivity, argues that a similar set of tools and capabilities need to be

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44-45 (explaining that wireless devices are not necessarily interchangeable and typically are designed for specific wireless networks).

<sup>34</sup> Verizon Comments at 58-61.

<sup>35</sup> See, e.g., Julius Genachowski, Chairman, Federal Communications Commission, Prepared Remarks to the New America Foundation, *Mobile Broadband: A 21st Century Plan for U.S. Competitiveness, Innovation and Job Creation*, at 3-4 (Feb. 24, 2010).

<sup>36</sup> See The Adoption and Use Working Group, U.S. Broadband Coalition, *Expanding and Accelerating the Adoption & Use of Broadband Throughout the Economy*, at 19 (Nov. 13, 2009) (recommending “[i]mplement[ing] a study to determine the efficacy of mobile broadband connections accessed via handheld devices as a primary tool for supporting unserved populations.”).

<sup>37</sup> Sarmad Ali, *Cisco Sees Mobile Data Doubling Annually*, posted to Wall St. J. Digits Blog, <http://blogs.wsj.com/digits/2010/02/12/cisco-sees-mobile-data-doubling-annually/tab/article/> (Feb. 12, 2010, 8:36 AM ET), (Cisco expects “within five years ... 400 million consumers will access the Internet through a mobile connection only.”).



available to service and applications providers, independent of network type, in order to guarantee the desired level of session and service continuity so the application or service quality can be “connectivity agnostic.”

Thus, ALU again urges the Commission to tread cautiously and, at most, consider issuing a further notice or initiating a proceeding to gather more information. “Rather than focus at this point on regulation of wireless broadband services, the Commission should continue to monitor these services as they develop and adopt measures that will help them grow.”<sup>38</sup>

## **V. MANAGED SERVICES AND QOS-ENABLED CAPABILITIES ARE CRITICAL TOOLS TO ADDRESS GROWING DEMAND FOR BROADBAND**

In its initial comments, ALU showed that, to meet growing broadband demand, network providers must be permitted to develop and offer managed services. As the Commission recognized in the *NPRM*, there is an important role (alongside broadband Internet access) for managed services and QoS-enabled capabilities in the development of broadband networks.<sup>39</sup> Should the Commission push forward with rules, it should broadly define “managed services” as those services that have some level of guaranteed quality of service – in contrast to “best effort” high-speed Internet access, for which no specific guarantees are provided – and ensure they have an opportunity to flourish free from regulation.<sup>40</sup>

Several commenters share ALU’s views regarding the role and importance of managed services and QoS-enabled capabilities. For example, Bright House Networks (“Bright House”) argues that there should be no limit on what cable networks can provide beyond “best effort” residential Internet service.<sup>41</sup> Consistent with ALU’s case for permitting the dynamic allocation

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<sup>38</sup> AT&T Comments at 145.

<sup>39</sup> *Notice*, 24 FCC Rcd at 13116 ¶ 148.

<sup>40</sup> ALU Comments at 12.

<sup>41</sup> Comments of Bright House Networks at 13.

of bandwidth between “best effort” and managed services, Bright House also cautions the Commission not to require a formal separation of managed and “best effort” Internet service, as the sharing of facilities increases efficiencies.<sup>42</sup> Clearwire Corporation (“Clearwire”) also advocated a broad definition of managed services, which includes the provision of QoS capabilities to customers.<sup>43</sup> Nokia Siemens Networks similarly supported a broad understanding of managed services to include some level of QoS, bandwidth or security guarantees.<sup>44</sup>

ALU explained that such managed services are critical to ensuring a robust user experience, given the sensitivity of increasingly popular applications to packet loss, delay, bandwidth fluctuations and the like. Moreover, as user demand for these popular applications continues to strain available network bandwidth, the challenges of providing these services over the “best effort” Internet will only become more intractable.<sup>45</sup> As ALU demonstrated in a technical white paper appended to its initial comments, the provision of managed services offers a net benefit to all network users.<sup>46</sup> In particular, the reduction in network congestion associated with the creation of a managed service translates into a reduction in jitter to the point where advanced real time services can be offered to all users of the “best effort” Internet offering with an acceptable average service experience. Further, the managed service will benefit those users seeking additional performance guarantees. And, of course, the managed service will enhance broadband service adoption, thereby supporting capacity expansion that benefits all users.

Clearwire also notes that the provision of managed service will spur increased deployment of broadband networks, more effective management of Internet traffic, and more

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<sup>42</sup> *Id.* at 14-15.

<sup>43</sup> Comments of Clearwire Corp. at 13-14 (“Clearwire Comments”).

<sup>44</sup> Comments of Nokia Siemens Networks at 13-14 (“Nokia Siemens Comments”).

<sup>45</sup> ALU Comments at 21.

<sup>46</sup> *See* ALU White Paper at 14-16.

satisfaction among enterprise and wholesale users that demand managed services.<sup>47</sup> Nokia Siemens Networks also underscored that meeting demand for managed services will be key to investment in next generation networks.<sup>48</sup>

For these reasons, the prudent approach is for the Commission to allow managed services and Internet access service to coexist and flourish without unnecessary regulatory constraints, thereby making the efficiencies these complementary services provide available to American consumers.

## **VI. THE COMMISSION SHOULD EMBRACE “APPLICATIONS ENABLEMENT” TO ALLOW USERS TO DECIDE WHETHER DIFFERENT TRAFFIC STREAMS SHOULD BE PRIORITIZED.**

### **A. Applications Enablement Empowers Users to Select QoS Capabilities When and Where They Choose.**

ALU noted in its initial comments that an important reason to refrain from expanding the current principles is that such rules, particularly an unqualified nondiscrimination provision, could hinder or preclude the development and use of user-directed QoS that can be offered in addition to conventional operator-provided managed services.<sup>49</sup> These capabilities, termed “applications enablement,” provide enormous value to users by allowing them to customize their broadband Internet access service (*e.g.*, by applying enhanced QoS to a customer-specified particular end point or application) to enhance the user’s experience with a particular application that is sensitive to packet loss or delay, or that requires extra security or bandwidth guarantees.<sup>50</sup>

The *NPRM*’s nondiscrimination proposal, however, could have the perverse effect of frustrating the very user freedom the Commission seeks to foster by prohibiting or discouraging

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<sup>47</sup> Clearwire Comments at 13.

<sup>48</sup> Nokia Siemens Comments at 12-14.

<sup>49</sup> ALU Comments at 11.

<sup>50</sup> *Id.* at 19.

applications enablement. Consequently, such requirements could force users either to rely on managed services that network owners pre-package for mass consumption, or have to pay for a higher bandwidth “best effort” service tier in order to obtain the desired service quality for a particular application, whose bandwidth requirements might in fact be much more modest. The resulting inefficient utilization of network resources would likely lead to a net reduction in the average user experience for a given level of investment.

The fact that applications enablement would generate significant gains in consumer welfare is recognized by parties with diverse interests, including network providers, content and applications producers and public interest advocates. For example, MetroPCS argues that priority service would benefit broadband consumers as it has consumers in other industries, and warns that requiring nondiscriminatory treatment for all services actually may hinder the introduction of new services that require special treatment, such as two-way voice and streaming video.<sup>51</sup> BT Americas notes that in the enterprise environment, it is both common and beneficial for “customers to demand and pay for different classes and priorities of services in order to ensure reliable performance of business-critical applications.”<sup>52</sup> TIA notes that direct requests for priority by end users is an emerging form of QoS which supports a wide range of services and applications such as cloud computing and web content delivery.<sup>53</sup> Amazon, a staunch supporter of network neutrality regulation, similarly recognizes the clear benefit where “a user could explicitly choose to have some content favored over other content that the user might receive.”<sup>54</sup>

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<sup>51</sup> Comments of MetroPCS Communications, Inc. at 24-25, 61-64.

<sup>52</sup> Comments of BT Americas Inc. at 2.

<sup>53</sup> TIA Comments at 37.

<sup>54</sup> Comments of Amazon.com at 2 (“Amazon Comments”); *see also* Comcast Comments at 40 (“the proposed rule could prohibit a broadband ISP from providing a service that allows *consumers* to decide which content, applications, or services they want to give priority status, despite widespread

While the Center for Democracy & Technology (“CDT”) expresses concern that network providers could engage in priority treatment of some applications over others, it nonetheless urges the Commission to make clear that any rule “will not prohibit providers of broadband Internet access service from enabling *individual subscribers* to designate how their different inbound or outbound traffic streams should be prioritized.”<sup>55</sup> CDT supports the concept of applications enablement, which “put[s] *subscribers* in control of priority designations that are truly ‘portable’ – i.e., that may be applied to whatever content, applications or services each subscriber may choose (so that one user might choose to prioritize a VoIP application, while another user might choose to prioritize a gaming application). . . .”<sup>56</sup> It goes on to state that under its view, “[n]othing in the rules would prohibit a broadband provider from charging subscribers a fee for the ability to designate traffic for prioritization. Nor would the rules prevent an application provider – interfacing directly with its users, rather than with the broadband provider – from offering users some kind of rebate to offset the cost.”<sup>57</sup>

ALU recognizes that some parties have raised questions regarding whether one customer’s use of applications enablement capabilities would adversely affect the online experience of nearby users relying on the same shared network architecture.<sup>58</sup> As an initial matter, ALU notes that the potential for one user to degrade another’s service exists today in the “best effort” context as well, at least with respect to heavy users. For example, any time a heavy user consumes a disproportionate amount of available bandwidth in shared portions of the network, other users’ traffic may be affected. In many cases, however, prioritizing one

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acknowledgement that such a service would be perfectly reasonable and beneficial to consumers.”) (emphasis in original).

<sup>55</sup> Comments of the Center for Democracy & Technology at 26 (“CDT Comments”) (emphasis in original).

<sup>56</sup> *Id.* at 27 (emphasis in original).

<sup>57</sup> *Id.* at 27 n.91.

<sup>58</sup> See, e.g., Amazon Comments at 2; Comments of Public Interest Commenters at 47.

customer's traffic will have no appreciable impact on other customers' traffic, especially when those other customers are using email or other applications that are not sensitive to latency or similar factors. Furthermore, ALU has shown that if the service provider is allowed provide innovative new services offerings using managed services or applications enablement models, the extra investment in capacity that results, will actually *improve* the average user experience in the "best effort" service context. If meaningful degradation of other customers' service were nonetheless somehow to materialize, broadband providers would have ample incentives to correct that problem, so as to retain customers and maximize their return on network investment.

Ultimately, however, the question of whether applications enablement by some users is at all likely to harm other users' online experience is a *technical and factual* question regarding the limits of broadband networks. At most, ALU urges the Commission to examine the issue further through its technical advisory process, rather than arbitrarily limit applications enablement or its benefits to consumers.

In sum, the record makes clear the significant benefits of applications enablement, and the Commission – if it decides it must pursue a nondiscrimination policy – must ensure that it does not frustrate the development of applications enablement and each consumer's resulting freedom to customize and improve their user experience.

**B. The Burgeoning Growth of Industry Standard APIs Establishes a Level Playing Field for All Application Service Providers to Offer QoS-Enabled Services.**

The broadband industry is developing open application programming interfaces ("APIs") that allow access to network capabilities and permit all applications developers, regardless of size, ownership, or source of funding, to design applications that can benefit from functionality such as QoS or messaging or location or content delivery services over broadband networks.

These efforts will enable all parties to take advantage of these pro-consumer features, fostering innovation and competition in broadband applications, and allowing consumers to define their preferred applications and to have those applications delivered with optimal QoS, based on the individual user's view of, and desire for, a given quality of experience.

Open APIs permit applications developers to “talk” with network equipment, thereby accessing the capabilities of the equipment – such as QoS – on behalf of or at the direction of users. Such openness means that applications developers and third-parties that seek enhanced capabilities need not work closely with each network provider or equipment manufacturer in order to make these empowering features available to end users. Indeed, open APIs will facilitate the vision offered by the CDT, where:

[A]n entity providing content, applications, or services does not need to worry about striking up relationships with various broadband providers to obtain top treatment. All it needs to worry about is building relationships with users and explaining to those users whether and how they may want to select the particular content, application, or service for priority treatment.<sup>59</sup>

Several major companies and industry coalitions have published open APIs and associated Software Development Kit (“SDKs”) allowing applications easy access to advanced network capabilities. For example, the GSM Alliance (“GSMA”) – one of the leading organizations in the mobile industry – is driving the “OneAPI” initiative, which provides a common specification that exposes application messaging, location and charging functionality.<sup>60</sup> This API is being extended to include capabilities such as video quality, which will allow QoS to be requested to ensure video streams are jitter and loss free and also to confirm the delivery of

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<sup>59</sup> CDT Comments at 27.

<sup>60</sup> GSMA, *3<sup>rd</sup> Party Access Project – OneAPI*, <https://gsma.securespsite.com/access/default.aspx> (last visited Apr. 7, 2010).

the service as specified.<sup>61</sup> GSMA's OneAPI currently supports a reference implementation that allows developers access to 10 different networks in 9 different countries.<sup>62</sup>

In addition, a group of 24 leading telecommunications operators, with the support of the GSMA, LG Electronics, Samsung, and Sony Electronics, have formed the "Wholesale Applications Community" ("WAC") in order to create an environment in which "developers, particularly small developers ... can flourish and create applications in a straight-forward and effective manner."<sup>63</sup> The WAC will provide a single gateway for developers to "access a vast potential customer base (over three billion with limited cost to the developer. . .)"<sup>64</sup> In essence, this group is aimed at unifying the creation, distribution and deployment of applications globally, and will leverage existing standard APIs such as GSMA OneAPI, but will also incorporate additional APIs addressing network QoS, security, and privacy.<sup>65</sup>

Such initiatives clearly demonstrate that the opening of network capabilities including QoS to developers is well advanced, and the ability for end users to have access to any application with any network capabilities they desire will be a reality in 2010 and beyond. Furthermore, as wireless and wireline networks and their associated management and applications frameworks converge, and with the increasing emphasis on 'multi-screen' services spanning consumer Mobile devices, PCs and TVs, these initiatives will allow access to

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<sup>61</sup> *Id.*

<sup>62</sup> See Graham Trickey, Senior Director, GSMA, Overview for the Mobile Entertainment Forum: Open Network Enablers API (June 2009), *available at* [http://www.m-e-f.org/fileadmin/user/Ksenia/webinar/MEF\\_Enablers\\_consolidated\\_slides.ppt#352,24](http://www.m-e-f.org/fileadmin/user/Ksenia/webinar/MEF_Enablers_consolidated_slides.ppt#352,24), Slide 24. GSMA also supports a related "Rich Communications Suite" which is a collaborative effort to facilitate the introduction of rich communication services over mobile and fixed networks in order to enhance the user experience, interconnection and interoperability. See GSM World, GSMA RCS Project, [http://gsmworld.com/our-work/mobile\\_lifestyle/rcs/gsma\\_rcs\\_project.htm](http://gsmworld.com/our-work/mobile_lifestyle/rcs/gsma_rcs_project.htm) (last visited Apr. 7, 2010).

<sup>63</sup> Wholesale Applications Community Web Page, <http://www.wholesaleappcommunity.com/> (last visited Apr. 7, 2010).

<sup>64</sup> *Id.*

<sup>65</sup> Press Release, Wholesale Applications Community, *Leading Operators Unite to Unleash Global Apps Potential* (Feb. 15, 2010), *available at* <http://www.wholesaleappcommunity.com/?q=content/leading-operators-unite-unleash-global-apps-potential-0>.



capabilities on any network and any device. The resulting competition and consumer choice will maximize the consumer benefits of the Internet.

Ultimately, these industry initiatives will create a broadband experience where consumers will not only enjoy the freedom of the open Internet by having the ability to choose the applications of their choice, but will also be capable of applying quality, priority or security enhancements to their chosen applications. However, while the application and service provider community view applications enablement as enhancing individual consumer choice, the Commission's proposed rules, particularly the unqualified nondiscrimination proposal, could harm or even preclude the deployment of such a system, which would inherently include some degree of service differentiation.

## **CONCLUSION**

ALU understands and, indeed, supports the goal of Internet openness that motivated the Commission to seek comment on the proposed network neutrality rules in this proceeding. The record developed thus far, however, makes it is clear that the rules as proposed would likely make matters much worse for consumers in the mid-to long-term. Accordingly, ALU urges the Commission not to adopt the proposed rules.

Respectfully submitted,

**ALCATEL-LUCENT**

By: /S/

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Paul W. Kenefick  
Vice President, Public Affairs  
Americas Region  
Alcatel-Lucent  
1100 New York, Avenue, N.W.  
Suite 640 West Tower  
Washington, D.C. 20005

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